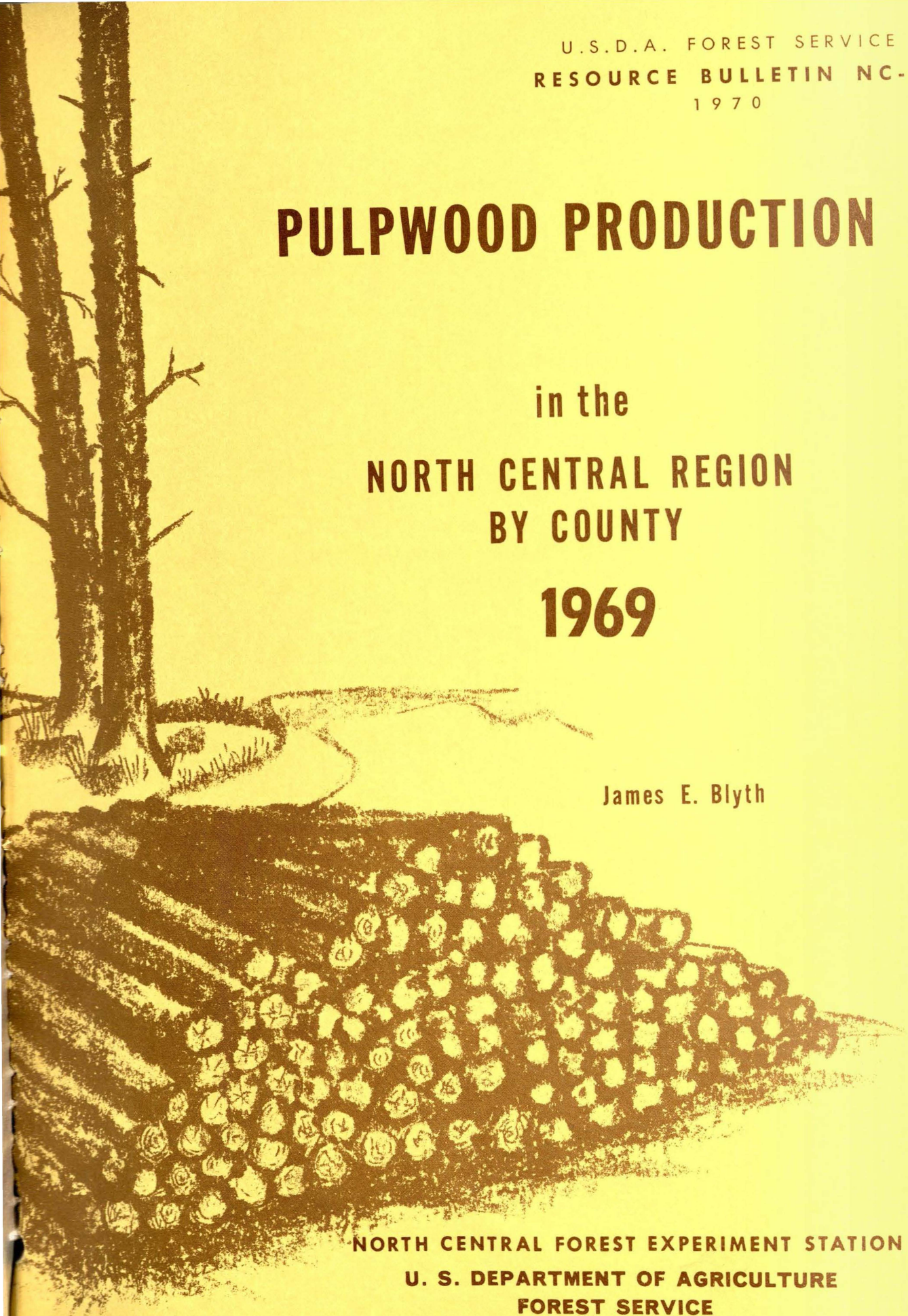
U.S.D.A. FOREST SERVICE
RESOURCE BULLETIN NC-11
1970

PULPWOOD PRODUCTION

in the

NORTH CENTRAL REGION BY COUNTY

1969



James E. Blyth

NORTH CENTRAL FOREST EXPERIMENT STATION
U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

The author, a Market Analyst on the staff of the North Central Forest Experiment Station, is headquartered at the Station's main office in St. Paul, Minnesota, which is maintained in cooperation with the University of Minnesota.

North Central Forest Experiment Station
D. B. King, Director
Forest Service — U.S. Department of Agriculture
Folwell Avenue
St. Paul, Minnesota 55101

Pulpwood Production in the North Central Region, By County, 1969

James E. Blyth

This is the 11th annual report on the pulpwood harvest in Lake States counties and the 10th annual report on the Central States harvest. The Lake States and Central States are discussed separately because the timber types in each area are different and less information can be released about the Central States – more detailed data published on pulpwood production and receipts in the Central States would reveal the operations of individual mills.

The pulpmills using North Central States timber in 1969 reported their pulpwood receipts by State and county. Their cooperation is gratefully acknowledged. Thanks are also due to Ray Pfeifer, Staff Forester, Forest Resource Development, Michigan Department of Natural Resources, for collecting data on the Michigan pulpmills.

LAKE STATES

Lake States pulpwood production and receipts [1] climbed to a more "normal" level in 1969 after being depressed in 1968 by a one-quarter million cord cutback in Wisconsin pulpmill wood inventories. The 1969 production was nearly 7 percent of the national pulpwood production in 1968.

[1] *Pulpwood production is defined as the pulpwood volume from timber lands in a specified area that was received at all mills during 1968, whereas pulpwood receipts are defined as the volume of wood received by mills in a specified area regardless of the geographic source.*

Production Rises 11 Percent

Lake States forests provided 3,944,000 cords of pulpwood in 1969, nearly 400,000 cords more than in 1968. More than 98 percent was consumed in the Lake States. Ninety-three percent was roundwood; the balance was residue [2] from local wood-using plants. Roundwood and residue used for pulping each rose 11 percent. Seventeen out of every 20 cords of Lake States residue delivered to pulpmills was in chip form.

More than half of the additional 400,000 cords was aspen. The rest was accounted for by increases of 86,000 cords in miscellaneous hardwoods, 53,000 cords in pine, and 25,000 cords in hemlock.

Not all softwood species shared in the larger harvest. Outputs of balsam fir and spruce were lower than at any time since World War II. Compared with 1968, the balsam fir harvest declined moderately, and spruce cutting dipped slightly. Tamarack production fell 8,000 cords.

At least two factors accounted for lower spruce-fir production during the last 5 years. One is the recent closing of several sulfite mills that used these species. The other is a substitution of other species and softwood plant residue for spruce-fir.

During the last 6 years, hardwood pulpwood has increased from 64 percent of the total Lake States pulpwood production to 70 percent (table 1).

[2] *Residue is byproducts from sawmills, veneer mills, cooperage mills, and other wood-using plants that are used for pulping. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from these byproducts.*

Table 1.—*Increase in Lake States hardwood pulpwood production, 1964-1969*

Year	Hardwoods including residues		Softwoods including residues	
	Volume	Percent of total	Volume	Percent of total
	M cords		M cords	
1964	2,332	64	1,296	36
1965	2,347	64	1,289	36
1966	2,876	67	1,404	33
1967	2,710	68	1,255	32
1968	2,421	68	1,130	32
1969	2,777	70	1,167	30

One-fifth of the roundwood harvest was peeled before delivery. Most of the peeled wood was aspen. Loggers peeled over half the aspen cut in Wisconsin, nearly one-third in Michigan, and over one-fifth in Minnesota (fig. 1). The percent of peeled aspen varied greatly by Survey Unit in each State.

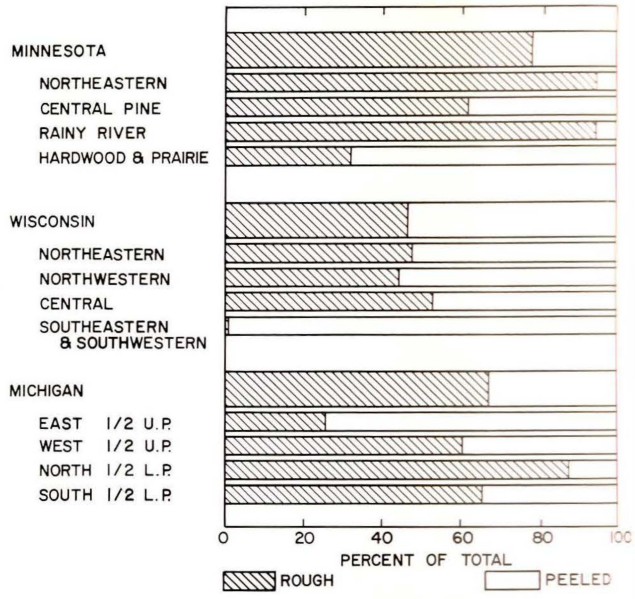


Figure 1.—Percent of rough and peeled aspen production of roundwood, by State and Forest Survey Unit, 1969.

1969 Pulpwood Production by State

Of the 1969 Lake States pulpwood output, Wisconsin supplied 37 percent, Michigan 33 percent, and Minnesota 30 percent.

The distribution of the pulpwood harvest is shown in two ways: first, the amount of pulpwood cut relative to commercial forest area, and second, the amount of pulpwood cut relative to the merchantable volume in major pulpwood species.

The heaviest cutting per 1,000 acres of stocked commercial forest land was in a band of counties beginning in northern Minnesota and extending through northeastern Wisconsin, western Upper Michigan, and northern Lower Michigan (fig. 2). The rate of cutting per 1,000 cords of merchantable volume in principal pulpwood species was greatest in central Wisconsin and lowest in southern Wisconsin (fig. 3.)

Wisconsin harvest shifts northward. – Although the cutting intensity was highest in central Wisconsin, the 1969 rate was lower than in 1968. Harvesting increased significantly in northern counties. Top-producing counties were Oneida, Price, and Forest. Production climbed 20,000 cords or more in Forest, Langlade, Lincoln, Marinette, and Bayfield Counties.

Michigan production rebounds 11 percent. —After a large drop in 1968, Michigan output climbed 134,000 cords in 1969. Use of Upper Peninsula wood residue for pulp more than doubled. Only southern Lower Michigan failed to increase its output. Menominee, Iron, and Lake County loggers cut the largest pulpwood volumes.

Minnesota production near 1967 peak. – Minnesota produced nearly 1,200,000 cords of pulpwood in 1969. More than two-thirds of the output increase occurred in the Central Pine Unit. The aspen cut was a record, 48,000 cords more than the previous high in 1966. Three large counties – St. Louis, Koochiching, and Itasca, provided 55 percent of the harvest.

Receipts Up 374,000 Cords

Forty-five Lake States plants received about 4.4 million cords of pulpwood in 1969, 9 percent above the 1968 level. Of these plants, 38 use aspen, 21 use spruce, and 17 use balsam fir (table 2). Two more mills began using wood chips in 1969 bringing the total to 13. Nine out of 10 cords delivered were roundwood or chips manufactured from roundwood.

Table 2.—*Number of plants using the different species of wood for pulping in 1969*

Species and kind of material	Lake States	Minn.	Wis.	Mich.
Aspen	38	9	22	7
Balsam fir	17	5	8	4
Birch	9	1	7	1
Hemlock	6	--	5	1
Pine	12	3	5	4
Spruce	21	5	12	4
Tamarack	4	1	3	--
Misc. hardwoods	14	2	8	4
Wood chips	13	3	7	3
Slabwood and other residue	5	--	4	1
Total plants	45	9	27	9

Regional mills procured more birch, softwood plant residue, and hardwood plant residue than ever before. Plant residue use has more than doubled since 1965. Most of the softwood residue is imported as chips from western States, whereas most of the hardwood residue is brought from Lake States sawmills and veneer mills.

Net imports from other States and Canada were more than 400,000 cords (table 3). For the first time, pulpwood imports from western States exceeded those from Canada. Softwood residue imports from western States reached a record high – nearly double the volume received in 1966. Two-thirds of the fiber from western States was softwood chips from mill residue. The rest was primarily roundwood (or chips from

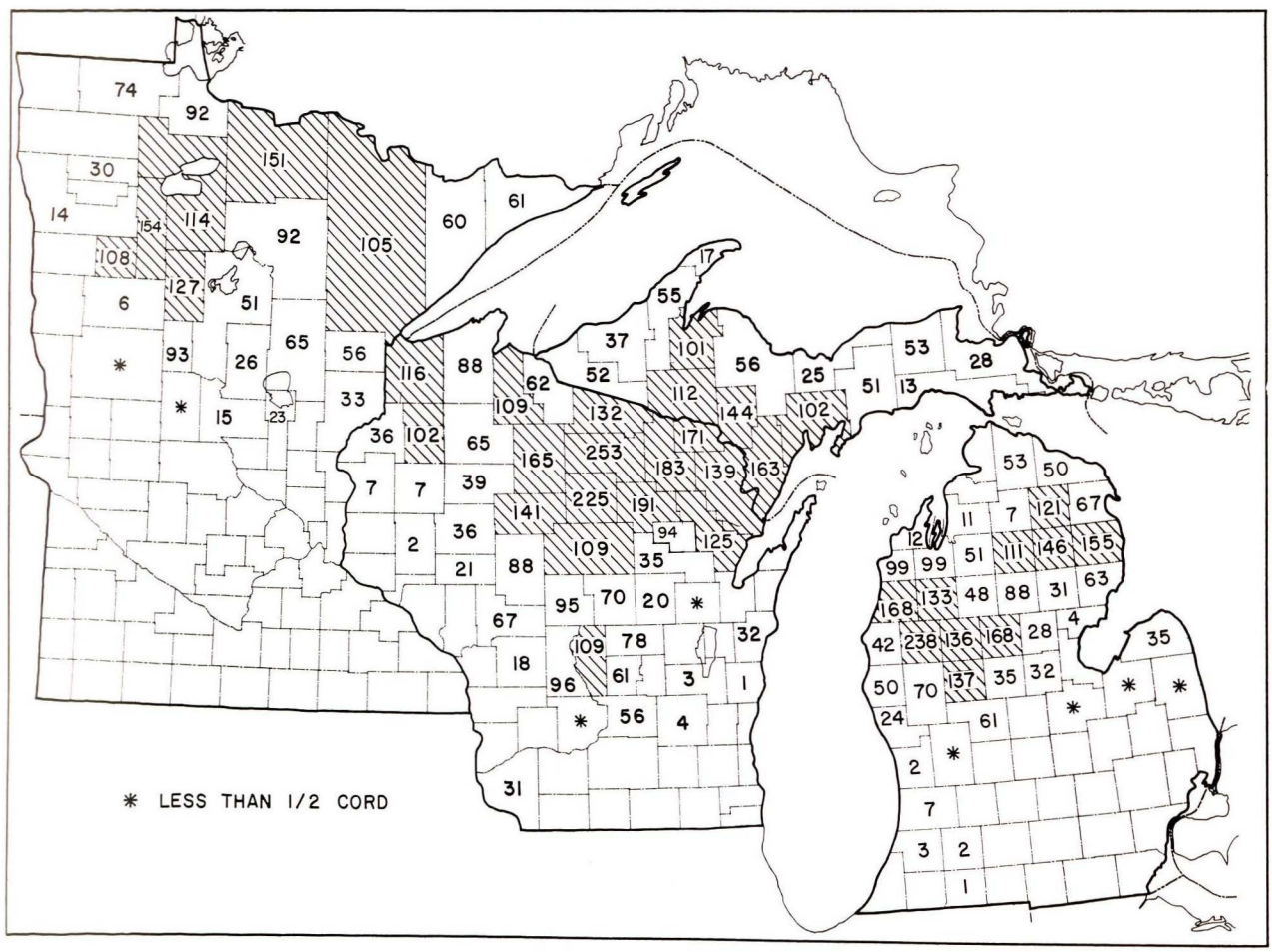


Figure 2.—Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1969. Crosshatching shows counties that supplied 100 or more cords of pulpwood per 1,000 acres of stocked commercial forest land.

Table 3.—*Pulpwood exports and imports for the Lake States, 1969*
(Thousand standard cords, unpeeled)

Species	Exports	Imports	Net exports or (imports)
Aspen	4	10	(6)
Birch	2	--	2
Balsam fir	1	--	1
Pine	1	144	(143)
Spruce	21	123	(102)
Mixed hardwoods	6	11	(5)
Residues, softwood	6	177	(171)
Residues, hardwood	12	10	2
Total	53	475	(422)

roundwood). By contrast, nearly all of the Canadian imports were pine and spruce roundwood.

Minnesota mills purchased a record 1,082,000 cords of pulpwood. Demand for aspen reached a new high, and pine receipts were the largest since 1951 in Minnesota.

Three-fourths of the additional wood purchases went to Wisconsin. Wisconsin procured all but 10,000 cords of the western States' wood destined for the Lake States. Michigan receipts were off slightly because one pulpmill closed.

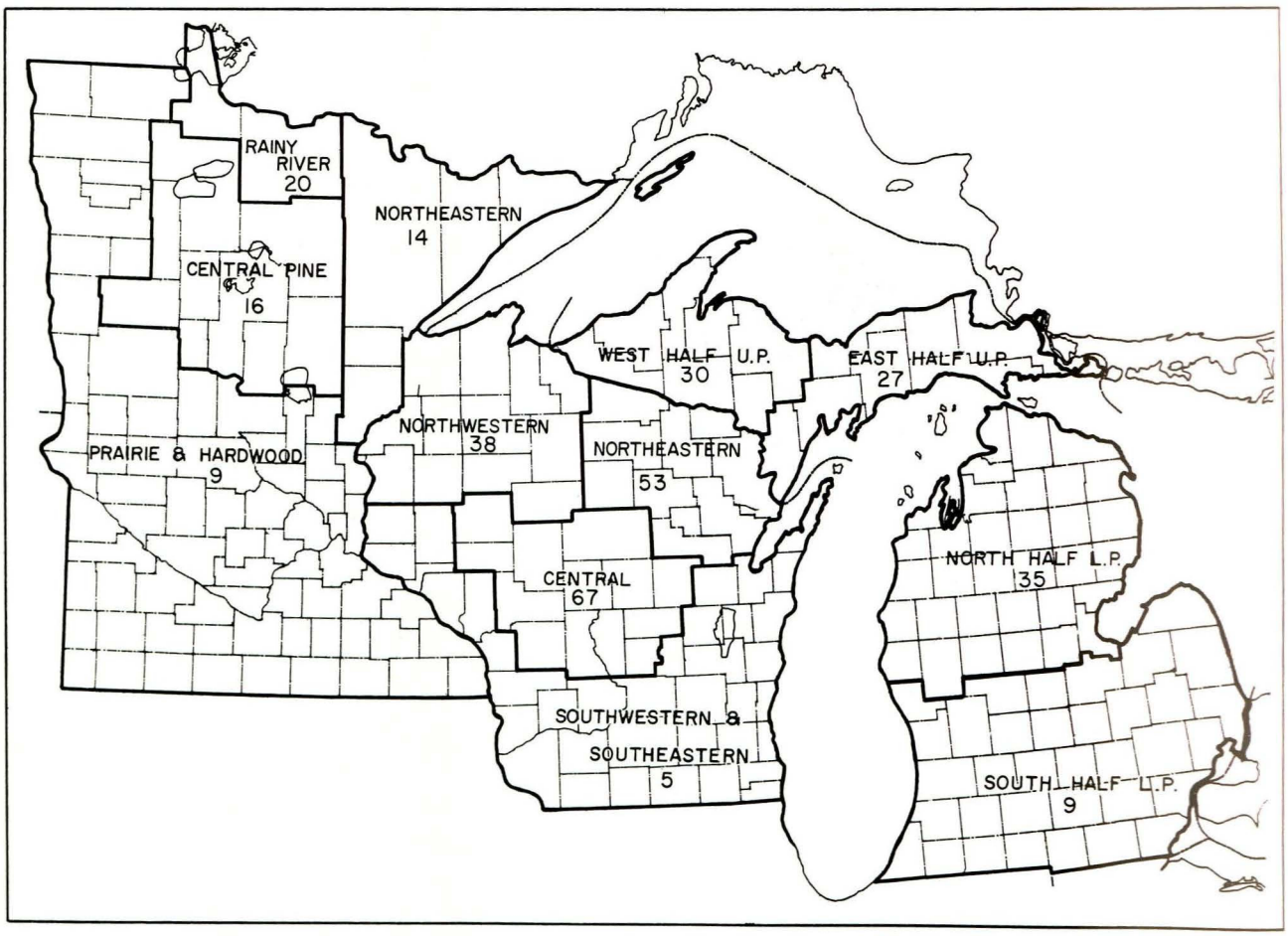


Figure 3.—Cords of pulpwood bolts and logs harvested per 1,000 cords of merchantable volume in principal pulpwood species, by Forest Survey Unit, 1969. The heavy lines delineate the boundaries of the Forest Survey Units in each State.

Table 4.—*Active woodpulp mills in the Lake States, by location, type of pulp produced, and capacity, 1969*

Company	Location	Mill capacity in tons per 24 hours[1/]				
		Total	Sulfite	Sulfate	Groundwood and other mechanical	Semi-chemical
Minnesota:						
Blandin Paper Co.	Grand Rapids	205	--	--	205	--
Hennepin Paper Co.	Little Falls	65	--	--	65	--
Boise Cascade Corp.	International Falls	750	--	300	450	--
Northwest Paper Co., The	Cloquet	425	120	305	--	--
Nu-Ply Corp.	Bemidji	75	--	--	75	--
St. Regis Paper Co.	Sartell	125	--	--	125	--
Superwood Corp.	Duluth	240	--	--	240	--
Hoerner Waldorf Corp.	St. Paul	300	--	--	--	300
Conwed Corp.	Cloquet	350	--	--	350	--
Total	9 plants	2,535	120	605	1,510	300
Wisconsin:						
American Can Co.	Green Bay	210	150	--	60	--
American Can Co.	Rothschild	190	190	--	--	--
Badger Paper Mills, Inc.	Peshtigo	90	90	--	--	--
Combined Paper Mills, Inc.	Combined Locks	175	--	--	175	--
Consolidated Papers, Inc.	Appleton	155	155	--	--	--
Consolidated Papers, Inc.	Stevens Point	100	--	--	100	--
Consolidated Papers, Inc.	Wisconsin Rapids	655	--	360	295	--
Green Bay Packaging, Inc.	Green Bay	200	--	--	--	200
Kansas City Star Co.	Park Falls	115	115	--	--	--
Kimberly-Clark Corp.	Kimberly	150	--	--	150	--
Kimberly-Clark Corp.	Niagara	150	--	--	150	--
Mosinee Paper Mills Co.	Mosinee	200	--	200	--	--
Nekoosa-Edwards Paper Co.	Nekoosa	310	--	310	--	--
Nekoosa-Edwards Paper Co.	Port Edwards	215	215	--	--	--
Owens-Illinois	Tomahawk	615	--	--	--	615
Charmin Paper Products Co.	Green Bay	2/	2/	--	2/	--
Charmin Paper Products Co.	Little Rapids	2/	--	--	2/	--
Scott Paper Co.	Marinette	50	50	--	--	--
Scott Paper Co.	Oconto Falls	110	110	--	--	--
St. Regis Paper Co.	Rhinelander	120	120	--	--	--
St. Regis Paper Co.	Cornell	50	--	--	50	--
Sterling Pulp & Paper Co.	Eau Claire	60	--	--	60	--
Superior Fiber Products Co.	Superior	180	--	--	180	--
Thilmany Pulp & Paper Co.	Kaukauna	375	--	375	--	--
Tomahawk Pulp Co., Inc.	Tomahawk	50	--	--	50	--
Wausau Paper Mills Co.	Brokaw	145	145	--	--	--
Evans Products Co.	Phillips	50	--	--	50	--
Total	27 plants	4,720	1,340	1,245	1,320	815
Michigan:						
Abitibi Corp.	Alpena	375	--	--	375	--
Celotex Corp.	L'Anse	270	--	--	270	--
Hoerner Waldorf Corp.	Ontonagon	250	--	--	--	250
Manistique Pulp & Paper Co.	Manistique	90	--	--	90	--
Mead Corp., The	Groos	100	--	--	100	--
Menasha Corp.	Otsego	225	--	--	--	225
Packaging Corp. of America	Filer City	600	--	200	--	400
Scott Paper Co.	Menominee	20	--	--	20	--
Warren Co., S.D.	Muskegon	225	--	225	--	--
Total	9 plants	2,155		425	855	875
All States	45 plants	9,410	1,460	2,275	3,685	1,990

1/ Lockwood's Directory of the Paper and Allied Industries-1970, and 1970 Directory of the Forest Products Industry.

2/ Capacity not available.

Regional Mill Capacity Expansion Nearly Offset Michigan Mill Closing

Despite the loss of a 170-ton-per-day Michigan sulfite mill, expansions at several other mills resulted in a net loss of only 20 tons of active regional daily mill capacity. Kraft mill capacity rose 100 tons of 2,275 tons per day (table 4). The increased pulpwood procurement in Minnesota partially resulted from the need for more wood after an 80-ton-per-day expansion in Minnesota mill capacity.

New Canadian Mill – Additional Outlet for Minnesota Wood

Construction of a 500-ton-per-day kraft pulpmill adjacent to Minnesota in Ontario is scheduled for completion in late 1971. This new facility should furnish northern Minnesota loggers with a larger pulpwood market. The $45 million mill will produce bleached and semi-bleached pulp.

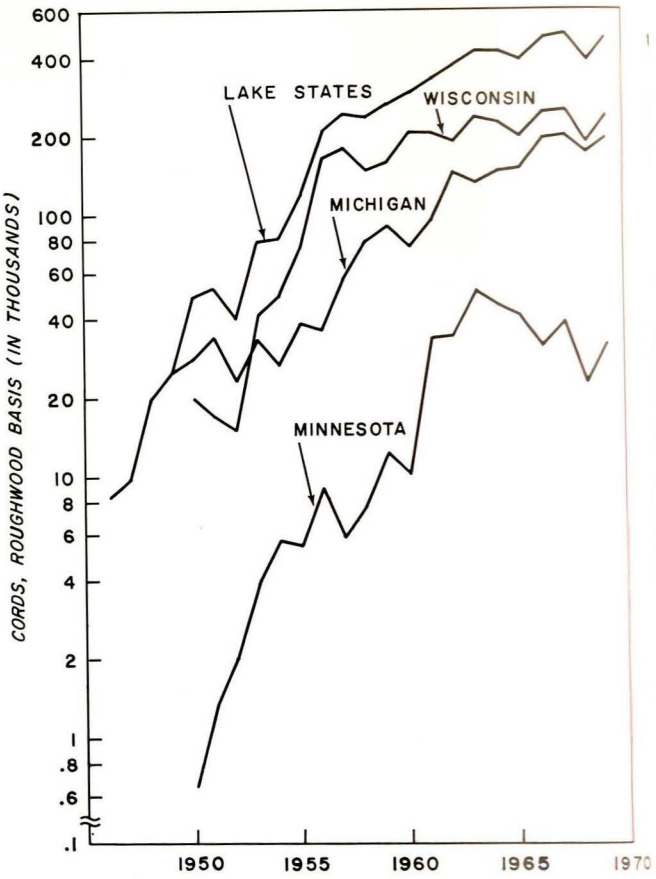


Figure 4.—Hardwood pulpwood production, by State in the Lake States, 1946-1969.

The Hardwood Pulpwood Story in the Lake States

The annual harvest of Lake States hardwood pulpwood [3] has risen from 8,000 cords in 1946 to 465,000 cords in 1969 (fig. 4). The largest harvest was 484,000 cords in 1967. During this period the rate of increase in production was greatest from 1952 to 1956. From 1957 to the present, the rate of increase declined, but the annual harvest in the last 5 years averaged 437,000 cords, compared with 240,000 cords in 1957. During the last 7 years, use of hardwood plant byproducts (such as slabs, edgings, and veneer cores) for pulping in the Lake States rose rapidly and undoubtedly took the place of some hardwood roundwood. This substitution is probably the major reason for the slow rate of increase in use of round hardwood for pulp recently.

In the late forties nearly all of the hardwood pulpwood cut was in Michigan, but by 1953 Wisconsin took the lead. In 1956 the Wisconsin cut was more than four times as great as the Michigan cut. Since then cutting in Michigan has greatly expanded and is now approaching production in Wisconsin. Minnesota has always been a relatively small producer – the largest volume cut was 51,000 cords in 1963.

[3] *Referred to as miscellaneous hardwoods in the tables of this and previous reports. Includes such species as red oak, white oak, hard maple, soft maple, ash, and elm. Aspen, birch and plant residues are excluded.*

Generally, hardwood pulpwood is used in the State where it is cut. Michigan exports about one-fifth of its harvest to Wisconsin mills, and very little to other States. Wisconsin mills have always used more than 94 percent of the local production. Except for 1967, more than 90 percent of the hardwood pulpwood used in Minnesota mills was cut locally.

Mixed hardwood pulpwood prices have risen slightly in Wisconsin since 1956. The following are delivered prices per rough cord (4- by 4-feet by 100 inches) in Wisconsin for selected years: [4]

Year	*Price range*
1956	$14.00-15.00
1957	$12.00-15.00
1958	$14.00-16.00
1959	$12.00-15.50
1960	$12.00-15.50
1961	$12.00-15.50
1962	$12.00-16.00
1967	$15.00-17.00
1968	$15.00-17.00
1969	$13.00-18.00

During the last 2 years the median delivered price in Wisconsin per rough mixed hardwood cord was $16.00 to $16.25. During this period only oak had a lower median price in Wisconsin.

Lake States pulpmills can usually obtain hardwoods at lower transportation costs than softwoods, because hardwood forests are closer to the mills. This is one of the reasons why the average delivered price per cord has been lower for hardwoods than for softwoods.

Use of hardwoods for pulp is expected to continue increasing with some substitution for softwoods. The rate of increase in round hardwood consumption will partially depend on the quantity of additional hardwood plant residue available to pulpmills.

[4] *From selected issues of Wisconsin Forest Products Price Review, University of Wisconsin, Cooperative Extension Programs.*

CENTRAL STATES

Central States pulpwood production and receipts reached a record peak for the second straight year. New and expanding outlets for pulpwood in surrounding States was a major reason for the larger production. Wood procurement is shifting from roundwood to plant residue.

Output from Residue Greater Than from Roundwood

For the first time, plant residue constituted more than half of the total Central States pulpwood yield. The margin over roundwood was only 2,600 cords, but it emphasized a long-term shift away from pulpmill dependence on roundwood.

Total production rose to 376,000 cords in 1969, 13 percent above 1968 (table 5). Output from residue climbed 67,000 cords, while roundwood harvesting fell 24,000 cords, primarily in soft hardwoods.[5] Since 1965, pulpwood production from Central States plant residue has increased more than sevenfold.

Regional pulpwood exports to nearby States were 40,000 cords, more than twice those in 1968. Nearly three-fourths of the volume was hardwood plant residue. Most of the wood is exported from Illinois and Missouri.

Pulpwood production increased substantially in Illinois, Indiana, and Missouri. Iowa production declined to about the 1965 level. Until 1968, Iowa and Missouri were minor pulpwood-producing States compared with Indiana and Illinois. Since 1967, however, Missouri output has doubled while Iowa production has remained essentially stable.

In each of the Central States, sawmills, veneer mills, and cooperage mills sold more hard-

[5] *Soft hardwoods include species such as elm, basswood, soft maple, yellow-poplar, and cottonwood. Hard hardwoods include oak, hard maple, beech, and hickory.*

Table 5.—*Central States pulpwood production and receipts, by State, 1969*

(In standard cords, unpeeled) [1]

Species group and destination	Production by States[2]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Region	Lake States	Other U. S.	Total imports	
Softwoods									
Illinois	800	--	--	--	800	--	--	--	800
Ind., Iowa, Mo.[3]	120	--	40	--	160	140	--	140	300
Exported	--	64	--	--	64	--	--	--	--
Total	920	64	40	--	1,024	140	--	140	1,100
Soft hardwoods									
Illinois	29,139	1,302	--	133	30,574	1,932	--	1,932	32,506
Ind., Iowa, Mo.[3]	5,495	35,217	8,031	17,731	66,474	5,865	2,238	8,103	74,577
Exported[4]	158	920	--	190	1,268	--	--	--	--
Total	34,792	37,439	8,031	18,054	98,316	7,797	2,238	10,035	107,083
Hard hardwoods									
Illinois	12,878	3,927	--	328	17,133	--	--	--	17,133
Ind., Iowa, Mo.[3]	8,784	41,911	8,780	5,035	64,510	4,380	2,053	6,433	70,943
Exported[4]	458	4,316	--	1,064	5,838	--	--	--	--
Total	22,120	50,154	8,780	6,427	87,481	4,380	2,053	6,433	88,076
Total roundwood									
Illinois	42,817	5,229	--	461	48,507	1,932	--	1,932	50,439
Ind., Iowa, Mo.[3]	14,399	77,128	16,851	22,766	131,144	10,385	4,291	14,676	145,820
Exported[4]	616	5,300	--	1,254	7,170	--	--	--	--
Total	57,832	87,657	16,851	24,481	186,821	12,317	4,291	16,608	196,259
Residues, softwood									
Illinois	908	--	1,501	--	2,409	4,188	4,505	8,693	11,102
Ind., Iowa, Mo.[3]	--	--	--	--	--	--	4,616	4,616	4,616
Exported[4]	--	4,494	--	--	4,494	--	--	--	--
Total	908	4,494	1,501	--	6,903	4,188	9,121	13,309	15,718
Residues, hardwood									
Illinois	57,358	1,002	--	46,916	105,276	6,931	11,811	18,742	124,018
Ind., Iowa, Mo.[3]	13,336	23,063	12,274	412	49,085	4,591	5,384	9,975	59,060
Exported[4]	3,000	15,402	954	8,800	28,156	--	--	--	--
Total	73,694	39,467	13,228	56,128	182,517	11,522	17,195	28,717	183,078
All wood material									
Illinois	101,083	6,231	1,501	47,377	156,192	13,051	16,316	29,367	185,559
Ind., Iowa, Mo.[3]	27,735	100,191	29,125	23,178	180,229	14,976	14,291	29,267	209,496
Exported[4]	3,616	25,196	954	10,054	39,820	--	--	--	--
Total	132,434	131,618	31,580	80,609	376,241	28,027	30,607	58,634	395,055

1/ Factors used in converting to standard green cords (128 cu. ft.) were: 4,500 pounds of soft hardwood roundwood; 5,000 pounds of hard hardwood or coniferous roundwood; 4,100 pounds of softwood chips (green); 4,400 pounds of hardwood chips (green); 2,500 pounds of chips (all species, dry).

2/ Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.

3/ Combined to prevent disclosure of individual mill receipts.

4/ Pulpwood shipped to mills outside the region.

wood residue to pulpmills than ever before. About half of the increase over 1968 was in Illinois.

Illinois harvested less roundwood in 1969 than any year since 1957. Harvesting fell in Iowa but remained steady in Indiana and Missouri, as shown in the 5-year summary below:

State	In thousand cords				
	1965	1966	1967	1968	1969
Illinois	77	97	69	76	58
Indiana	82	94	69	87	88
Iowa	25	27	27	25	17
Missouri	20	19	21	23	24
Total	204	237	186	211	187

The number of Central States counties supplying roundwood increased from 111 in 1968 to 122 in 1969. Of these, 44 were in Indiana, 42 in Illinois, 23 in Missouri, and 13 in Iowa (fig. 5). Top-producing counties in each State were Lawrence and Gibson in Indiana, Wabash and Pulaski in Illinois, Carroll and Clark in Missouri, and Lee and Des Moines in Iowa.

Receipts Approach 400,000 Cords

Central States pulpmills received 8 percent more pulpwood in 1969 than in 1968. Roundwood receipts dropped 28,000 cords, while residue purchases increased 57,000 cords (table 6). As a result, residue receipts had a 2,500 cord margin over roundwood receipts. Previously roundwood had always been the major type of pulpwood consumed.

Central States producers supplied 21,000 more cords of wood to local mills than in 1968. Imports from other States rose 8,000 cords but were only 15 percent of all wood purchases.

The eight pulpmills in Illinois bought 47 percent of all pulpwood in the region, including two-thirds of the wood residue. Of the 29,000-cord increase in wood receipts in 1969, all but 3,500 cords went to Illinois plants.

Table 6.—*Trends in receipts (standard cords, unpeeled) of roundwood and residue as pulpwood, Central States, 1965-1969*

Type of material and area	1965	1966	1967	1968	1969
Roundwood					
Illinois	68	84	63	68	50
Indiana, Iowa, Missouri	143	163	138	156	146
Total	211	247	201	224	196
Residue					
Illinois	22	25	50	92	135
Indiana, Iowa, Missouri	24	29	37	50	64
Total	46	54	87	142	199
All material	257	301	288	366	395

Pulping of residue will probably continue increasing for several reasons. Some additional sawmills will install debarkers and chippers to upgrade their residue to the quality needed by pulpmills. Some pulpmills have had difficulty obtaining roundwood because woods labor was scarce, but have found other primary wood-using mills to be reliable suppliers of wood chips from their plant byproducts. Less woodyard space is required at pulpmills when chips from byproducts are substituted for roundwood. Finally, new pollution control laws restricting burning of waste material may stimulate primary mills to locate pulpwood outlets for their byproducts.

Active Pulpmill Capacity Rises; Indiana Mill to Close in 1970

Fifteen active Central States pulpmills had a daily capacity of 1,630 tons in 1969, 70 tons greater than in 1968 (table 7). However, an Indiana plant will close its 120-ton-per-day semichemical pulpmill in 1970 and use wastepaper as a raw material. No major expansions at the other 14 mills have been announced.

Figure 5.—Harvest of pulpwood bolts in the Central States by Counties, in standard cords, 1969.

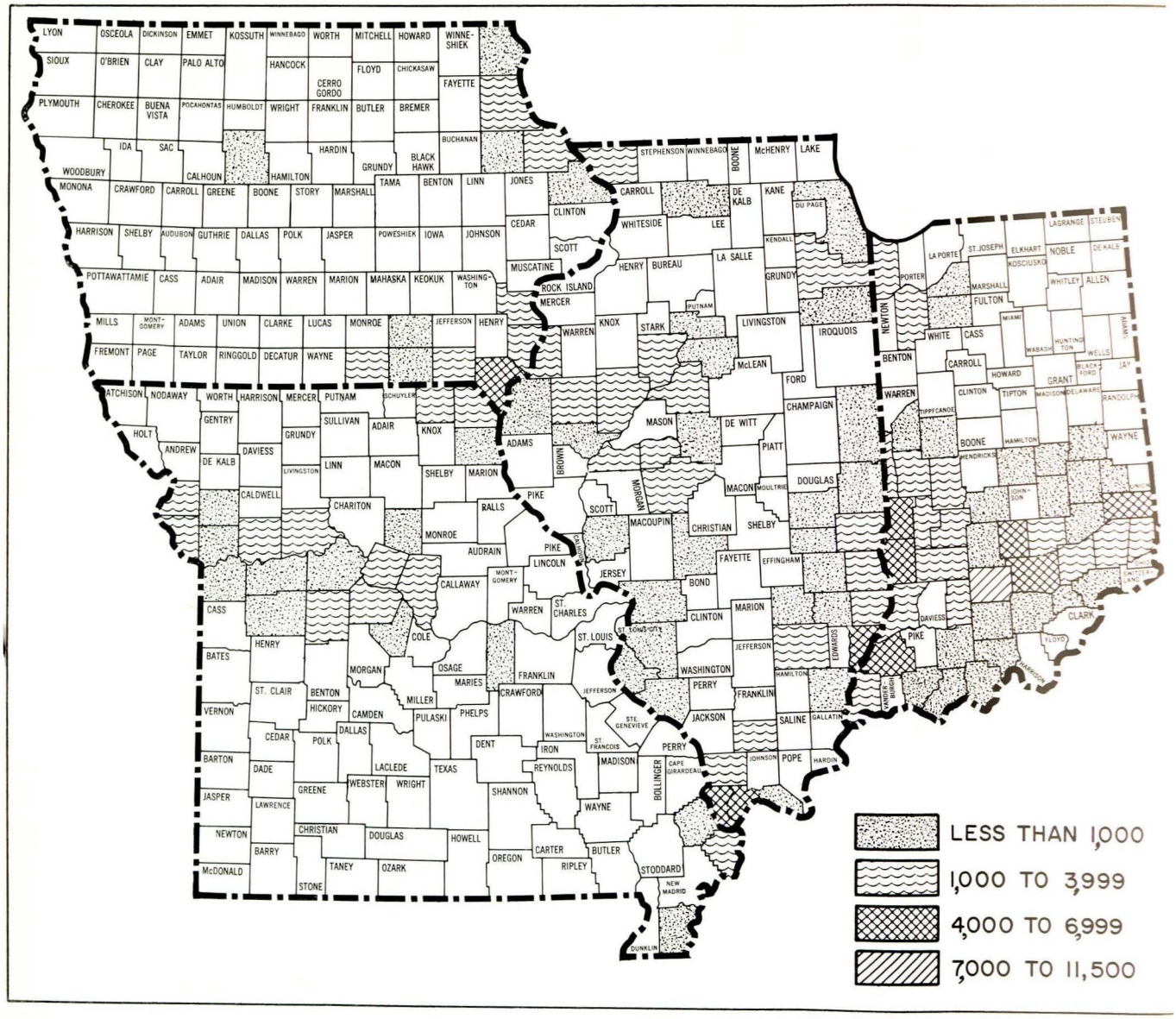


Table 7.—*Active woodpulp mills in the Central States by location, type of pulp produced, and capacity, 1969*

Company	Location	Mill capacity in tons per 24 hours[1/]				
		Total	Sulfite	Sulfate	Groundwood and other mechanical	Semi-chemical
Illinois:						
Philip Carey Corp.	Wilmington	30	--	--	30	--
Celotex Corp.	Peoria	190	--	--	190	--
Alton Box Board Co.	Alton	300	--	--	--	300
Bird & Son, Inc.	Chicago	40	--	--	40	--
Certain-Teed Products Corp.	East St. Louis	100	--	--	100	--
Flintkote Co., The	Mt. Carmel	40	--	--	40	--
Johns-Manville Products Corp.	Waukegan	65	--	--	65	--
GAF Corp.	Joliet	100	--	--	100	--
Total	8 plants	865	--	--	565	300
Indiana:						
Container Corp. of America	Carthage	120	--	--	--	120
Weston Paper & Manufacturing Co.	Terre Haute	250	--	--	--	250
Total	2 plants	370	--	--	--	370
Iowa:						
Celotex Corp.	Dubuque	90	--	--	--	90
Consolidated Packaging Corp.	Fort Madison	135	--	--	--	135
United States Gypsum Co.	Fort Dodge	2/	--	--	--	--
Total	3 plants	225	--	--	--	225
Missouri:						
Huebert Fiberboard, Inc.	Booneville	60	--	--	60	--
GAF Corp.	Kansas City	110	--	--	110	--
Total	2 plants	170	--	--	170	--
All States	15 plants	1,630	--	--	735	895

1/ Lockwood's Directory of the Paper and Allied Industries-1970, and 1970 Directory of the Forest Products Industry.

2/ Capacity not available.

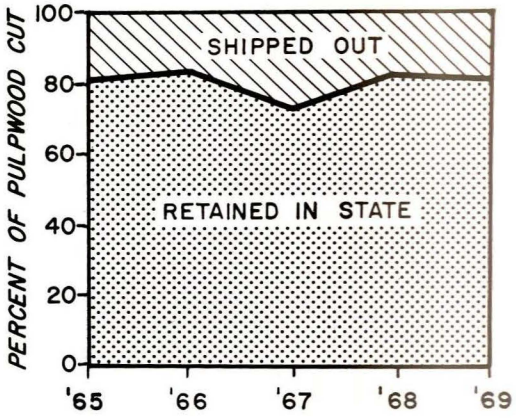
APPENDIX

Table 8.—*Lake States pulpwood production, by State of origin and destination, 1965-1969*

MINNESOTA

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1965	1,018	842	159	--	17
1966	1,174	970	193	*	11
1967	1,205	884	299	*	22
1968	1,087	900	166	*	21
1969	1,192	977	188	--	27
5-year average	1,135	914	201	*	20

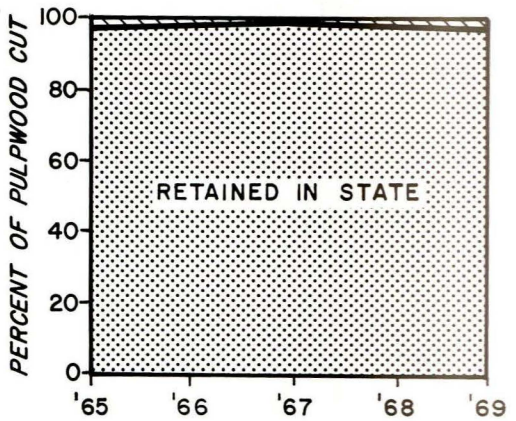
*Less than 500 cords.



WISCONSIN

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1965	1,253	8	1,225	1	19
1966	1,536	13	1,501	3	19
1967	1,416	15	1,387	*	14
1968	1,297	22	1,259	4	12
1969	1,450	17	1,412	9	12
5-year average	1,390	15	1,357	3	15

*Less than 500 cords.



MICHIGAN

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1965	1,365	--	608	750	7
1966	1,570	1	666	901	2
1967	1,344	--	660	684	*
1968	1,168	--	455	702	11
1969	1,302	--	537	752	13
5-year average	1,350	*	585	758	7

*Less than 500 cords.

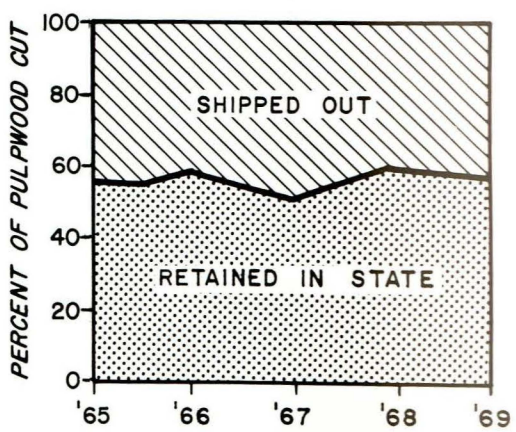


Table 9.—*Lake States pulpwood production, by Forest Survey Unit and destination by State, 1969*

(Thousand standard cords, roughwood basis)

MINNESOTA

Unit	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
Northeastern	437	328	106	--	3
Central Pine	437	363	69	--	5
Rainy River	253	225	8	--	20
Hardwood & Prairie	65	61	4	--	--
Total	1,192	977	187	--	28

WISCONSIN

Unit	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
Northeastern	709	--	699	9	1
Northwestern	478	6	472	--	*
Central	213	3	210	--	*
Southeastern & Southwestern	50	8	32	--	10
Total	1,450	17	1,413	9	11

MICHIGAN

Unit	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
E. 1/2 Up. Pen.	277	--	197	68	12
W. 1/2 Up. Pen.	402	--	340	61	1
N. 1/2 Low. Pen.	575	--	--	575	--
S. 1/2 Low. Pen.	48	--	--	48	--
Total	1,302	--	537	752	13

*Less than 500 cords.

Table 10.—*Lake States pulpwood production by species, State, and Forest Survey Unit, 1965-1969*

(Thousand standard cords, roughwood basis)

Unit	ASPEN Annual production					BALSAM FIR Annual production				
	1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
MINNESOTA										
Northeastern	177	205	205	203	204	22	20	26	12	10
Central Pine	186	272	265	218	289	23	35	30	18	18
Rainy River	96	123	108	131	148	28	25	20	13	12
Prairie & Hardwood	9	12	13	31	19	*	--	--	*	--
Total	468	612	591	583	660	73	80	76	43	40
WISCONSIN										
Northeastern	341	449	430	369	416	25	28	26	25	28
Northwestern	220	298	273	202	244	24	26	21	22	22
Central	45	61	35	55	35	1	1	*	4	*
Southeastern & Southwestern	2	2	1	3	2	--	--	*	--	--
Total	608	810	739	629	697	50	55	47	51	50
MICHIGAN										
E. 1/2 Up. Pen.	142	156	144	95	119	41	48	50	39	27
W. 1/2 Up. Pen.	207	222	237	167	184	30	37	38	22	16
N. 1/2 Low. Pen.	341	388	258	274	296	2	3	3	1	1
S. 1/2 Low. Pen.	14	10	7	5	7	--	--	--	--	--
Total	704	776	646	541	606	73	88	91	62	44
LAKE STATES	1,780	2,198	1,976	1,753	1,963	196	223	214	156	134

*Less than 500 cords.

(Continued on next page)

(Table 10 continued)

MINNESOTA

Unit	BIRCH Annual production					HEMLOCK Annual production				
	1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
Northeastern	--	--	1	*	3	--	--	--	--	--
Central Pine	*	1	2	1	*	--	--	--	--	--
Rainy River	--	--	--	--	--	--	--	--	--	--
Prairie & Hardwood	--	--	--	--	--	--	--	--	--	--
Total	*	1	3	1	3	--	--	--	--	--
WISCONSIN										
Northeastern	5	9	28	18	23	37	48	27	22	32
Northwestern	17	26	46	35	37	21	18	13	18	16
Central	2	4	10	3	3	2	3	2	4	3
Southeastern & Southwestern	*	--	*	*	--	--	--	--	*	--
Total	24	39	84	56	63	60	69	42	44	51
MICHIGAN										
E. 1/2 Up. Pen.	5	3	3	2	1	9	21	16	9	11
W. 1/2 Up. Pen.	1	2	2	*	1	55	78	44	36	52
N. 1/2 Low. Pen.	26	8	6	11	21	--	--	--	--	*
S. 1/2 Low. Pen.	--	--	--	--	*	--	--	--	--	--
Total	32	13	11	13	23	64	99	60	45	63
LAKE STATES	56	53	55	70	89	124	168	102	89	114

*Less than 500 cords.

(Continued on next page)

(Table 10 continued)

MINNESOTA

Unit	JACK PINE[1/] Annual production					SPRUCE Annual production				
	1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
Northeastern	101	138	108	121	133	106	78	93	66	66
Central Pine	56	85	69	62	74	38	31	45	31	27
Rainy River	12	15	11	12	18	92	61	79	60	60
Prairie & Hardwood	12	18	14	8	12	2	2	1	*	1
Total	181	256	202	203	237	238	172	218	157	154
WISCONSIN										
Northeastern	57	58	45	46	63	10	14	10	7	10
Northwestern	76	92	61	57	77	5	4	3	3	3
Central	72	64	67	94	75	*	*	*	1	*
Southeastern & Southwestern	1	1	1	2	1	--	--	--	--	--
Total	206	215	174	199	216	15	18	13	11	13
MICHIGAN										
E. 1/2 Up. Pen.	66	63	40	39	59	28	31	33	23	20
W. 1/2 Up. Pen.	47	47	36	33	38	36	42	40	16	18
N. 1/2 Low. Pen.	110	138	115	131	109	1	1	2	*	1
S. 1/2 Low. Pen.	1	2	2	2	1	--	--	--	--	--
Total	224	250	193	205	207	65	74	75	39	39
LAKE STATES	611	721	569	607	660	318	264	306	207	206

*Less than 500 cords.

1/ Includes small quantity of red and white pine.

(Continued on next page)

(Table 10 continued)

MINNESOTA

Unit	TAMARACK Annual production					MISC. HARDWOODS Annual production				
	1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
Northeastern	5	1	6	4	4	4	4	9	7	11
Central Pine	6	6	27	16	14	24	13	6	5	11
Rainy River	--	*	4	4	2	10	13	23	9	8
Prairie & Hardwood	1	*	3	1	1	3	1	1	2	2
Total	12	7	40	25	21	41	31	39	23	32
WISCONSIN										
Northeastern	1	1	2	3	1	56	80	64	60	87
Northwestern	3	2	1	2	1	56	70	62	50	61
Central	--	*	--	*	*	77	84	71	68	81
Southeastern & Southwestern	*	--	--	--	--	9	8	6	7	9
Total	4	3	3	5	2	198	242	203	185	238
MICHIGAN										
E. 1/2 Up. Pen.	2	1	1	1	1	8	16	6	3	10
W. 1/2 Up. Pen.	1	*	*	1	1	63	70	79	48	38
N. 1/2 Low. Pen.	*	--	--	--	--	75	103	112	116	141
S. 1/2 Low. Pen.	--	--	--	--	--	3	5	2	4	7
Total	3	1	1	2	2	149	194	199	171	196
LAKE STATES	19	11	44	32	25	388	467	484	379	466

*Less than 500 cords.

(Continued on next page)

(Table 10 continued)

Unit	RESIDUES					ALL SPECIES[1]				
	Annual production					Annual production				
	1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
MINNESOTA										
Northeastern	1	3	11	8	6	416	449	459	421	437
Central Pine	2	6	9	12	4	335	449	453	363	437
Rainy River	--	--	4	11	5	238	237	249	240	253
Prairie & Hardwood	2	6	12	21	30	29	39	44	63	65
Total	5	15	36	52	45	1,018	1,174	1,205	1,087	1,192
WISCONSIN										
Northeastern	51	49	41	53	49	583	736	673	603	709
Northwestern	8	7	22	21	17	430	543	502	410	478
Central	6	5	22	16	16	205	222	207	245	213
Southeastern & Southwestern	23	24	26	27	38	35	35	34	39	50
Total	88	85	111	117	120	1,253	1,536	1,416	1,297	1,450
MICHIGAN										
E. 1/2 Up. Pen.	5	11	2	2	29	306	350	295	213	277
W. 1/2 Up. Pen.	26	23	32	34	54	466	521	508	357	402
N. 1/2 Low. Pen.	--	3	11	16	6	555	644	507	549	575
S. 1/2 Low. Pen.	20	38	23	38	33	38	55	34	49	48
Total	51	75	68	90	122	1,365	1,570	1,344	1,168	1,302
LAKE STATES	144	175	215	259	287	3,636	4,280	3,965	3,552	3,944

1/ Including residues.

Table 11.—*Lake States pulpwood production by county and species, 1969*

(Thousand standard cords, roughwood basis)

WISCONSIN

Unit and county[1/]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hdwds.	Residues[2/]
NORTHEASTERN:										
Florence	44	36	1	*	2	2	1	--	2	
Forest	95	63	4	2	11	2	1	*	12	
Langlade	72	51	1	4	1	1	*	*	14	
Lincoln	89	57	2	3	1	7	1	*	18	
Marinette	89	59	9	1	4	8	2	*	6	
Menominee	20	13	--	--	7	*	--	--	--	
Oconto	44	34	1	*	2	5	*	*	2	
Oneida	142	70	8	9	2	24	4	1	24	
Shawano	9	5	*	*	1	*	*	*	3	
Vilas	56	28	2	4	1	14	1	*	6	
Total	709	416	28	23	32	63	10	1	87	49
NORTHWESTERN:										
Ashland	56	32	6	2	4	4	1	--	7	
Barron	1	*	--	*	--	--	--	--	1	
Bayfield	66	38	1	5	1	19	*	*	2	
Burnett	11	3	*	*	--	8	--	*	*	
Douglas	70	46	*	1	--	23	*	--	*	
Iron	23	11	2	2	3	1	*	--	4	
Polk	1	*	--	--	--	1	*	--	*	
Price	97	46	8	16	3	2	1	*	21	
Rusk	12	8	*	1	*	*	--	--	3	
Sawyer	39	18	4	6	2	3	1	*	5	
Taylor	50	25	1	4	3	1	*	*	16	
Washburn	35	17	*	*	--	15	*	1	2	
Total	478	244	22	37	16	77	3	1	61	17
CENTRAL:										
Adams	27	*	--	--	--	14	--	--	13	
Chippewa	7	6	*	*	*	1	*	--	*	
Clark	23	8	*	*	*	4	--	--	11	
Eau Claire	3	*	--	--	--	3	--	--	*	
Jackson	22	*	--	--	--	21	--	--	1	
Juneau	22	1	--	*	--	16	--	--	5	
Marathon	40	13	*	3	3	1	*	*	20	
Marquette	6	--	--	--	--	*	--	--	6	
Monroe	4	1	--	--	--	3	--	--	*	
Portage	11	2	*	--	*	3	*	*	6	
Waupaca	3	2	*	*	*	*	--	*	1	
Waushara	9	*	--	--	--	3	--	--	6	
Wood	20	2	*	--	*	6	--	*	12	
Total	213	35	*	3	3	75	*	*	81	16

(Continued on next page)

(Table 11 continued)

WISCONSIN (continued)

Unit and county 1/	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hdwds.	Residues 2/
SOUTHWESTERN:										
Dunn	*	*	--	--	--	*	--	--	--	
Grant	5	--	--	--	--	--	--	--	5	
Sauk	*	--	--	--	--	*	--	--	--	
Total	32	*	--	--	--	*	--	--	5	27
SOUTHEASTERN:										
Columbia	5	--	--	--	--	1	--	--	4	
Dodge	*	--	--	--	--	--	--	--	*	
Fond du lac	*	--	--	--	--	--	--	--	*	
Manitowoc	2	2	--	--	--	--	--	--	--	
Outagamie	*	*	--	--	--	--	--	--	*	
Sheboygan	*	--	--	--	--	--	--	--	*	
Total	18	2	--	--	--	1	--	--	4	11
State total	1,450	697	50	63	51	216	13	2	238	120

1/ Includes only those counties that supplied pulpwood in 1969.
2/ County figures are not available.
* Less than 500 cords.

(Continued on next page)

(Table 11 continued)

MICHIGAN

Unit and county[1/]	All species	Aspen	Balsam	Birch	Hem-lock	Pine	Spruce	Tam-arack	Misc. hdwds.	Residues[2/]
E. 1/2 UP. PEN.:										
Alger	13	2	1	--	1	7	1	--	1	
Chippewa	21	6	*	*	1	9	2	1	2	
Delta	63	31	9	*	3	11	7	*	2	
Luce	28	2	3	--	2	17	3	*	1	
Mackinac	7	1	2	*	*	2	1	--	1	
Menominee	83	65	9	1	2	*	4	*	2	
Schoolcraft	33	12	3	*	2	13	2	*	1	
Total	277	119	27	1	11	59	20	1	10	29
W. 1/2 UP. PEN.:										
Baraga	54	23	*	1	11	6	1	*	12	
Dickinson	64	52	2	--	2	2	5	1	*	
Gogebic	33	11	1	*	11	2	*	*	8	
Houghton	30	11	1	*	12	2	2	*	2	
Iron	76	48	4	--	6	2	2	*	14	
Keweenaw	4	--	2	--	--	--	2	*	--	
Marquette	61	23	4	--	3	24	6	*	1	
Ontonagon	26	16	2	--	7	*	*	--	1	
Total	402	184	16	1	52	38	18	1	38	54
N. 1/2 LOW. PEN.:										
Alcona	49	35	*	2	--	1	--	--	11	
Alpena	14	9	*	1	--	1	*	--	3	
Antrim	2	2	--	*	--	--	--	--	*	
Arenac	*	*	--	*	--	*	--	--	*	
Benzie	12	9	--	1	--	*	--	--	2	
Cheboygan	18	13	*	2	--	1	*	--	2	
Clare	37	25	--	2	--	3	--	--	7	
Crawford	33	9	--	1	--	21	--	--	2	
Gladwin	5	4	--	*	--	*	--	--	1	
Grand Traverse	16	10	--	1	--	2	--	--	3	
Iosco	15	3	--	*	--	10	--	--	2	
Isabella	3	3	--	*	--	--	--	--	*	
Kalkaska	14	9	--	*	--	3	--	--	2	
Lake	69	20	--	1	--	12	--	--	36	
Leelanau	1	1	--	*	--	--	--	--	--	
Manistee	36	12	--	1	*	1	--	--	22	
Mason	6	2	--	*	--	2	--	--	2	
Mecosta	19	15	--	*	--	*	--	--	4	
Midland	5	5	--	*	--	*	--	--	*	
Missaukee	11	8	--	*	--	1	--	--	2	
Montmorency	35	18	*	2	--	7	1	--	7	
Newaygo	21	9	--	*	--	2	--	--	10	
Oceana	7	2	--	*	--	2	--	--	3	
Ogemaw	7	3	--	*	--	3	--	--	1	
Osceola	23	18	--	*	--	*	--	--	5	
Oscoda	43	15	*	2	--	23	*	--	3	
Otsego	2	*	--	--	--	2	--	--	--	
Presque Isle	14	7	1	2	--	*	*	--	4	
Roscommon	23	14	*	2	--	3	*	--	4	
Wexford	29	16	--	1	--	9	--	--	3	
Total	575	296	1	21	*	109	1	--	141	6

(Continued on next page)

(Table 11 continued)

MICHIGAN (continued)

Unit and county[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hdwds.	Residues[2]
S. 1/2 LOW. PEN.:										
Allegan	1	*	--	--	--	--	--	--	1	
Huron	2	2	--	--	--	--	--	--	--	
Kalamazoo	*	*	--	--	--	*	--	--	*	
Kent	*	--	--	--	--	*	--	--	--	
Montcalm	8	4	--	*	--	*	--	--	4	
Muskegon	4	1	--	--	--	1	--	--	2	
Ottawa	*	*	--	--	--	*	--	--	*	
Saginaw	*	--	--	--	--	*	--	--	--	
St. Joseph	*	*	--	--	--	--	--	--	*	
Sanilac	*	*	--	--	--	--	--	--	--	
Tuscola	*	*	--	--	--	--	--	--	--	
Van Buren	*	--	--	--	--	--	--	--	*	
Total	48	7	--	*	--	1	--	--	7	33
State total	1,302	606	44	23	63	207	39	2	196	122

1/ Includes only those counties that supplied pulpwood in 1969.
2/ County figures are not available.
* Less than 500 cords.

(Continued on next page)

(Table 11 continued)

MINNESOTA

Unit and county 1/	All species	Aspen	Balsam	Birch	Pine	Spruce	Tamarack	Misc. hdwds.	Residues 2/
NORTHEASTERN:									
Carlton	17	13	1	2	1	*	*	--	
Cook	40	*	1	--	8	31	*	--	
Lake	61	12	1	--	31	16	1	--	
Pine	12	9	*	--	1	*	*	2	
St. Louis	301	170	7	1	92	19	3	9	
Total	437	204	10	3	133	66	4	11	6
CENTRAL PINE:									
Aitkin	46	37	1	--	1	3	4	--	
Becker	2	2	*	--	--	*	*	--	
Beltrami	93	59	6	*	16	6	2	4	
Cass	47	32	1	*	9	1	1	3	
Clearwater	50	37	1	--	4	2	2	4	
Crow Wing	11	3	*	--	8	*	--	--	
Hubbard	52	40	*	--	11	1	*	*	
Itasca	121	75	9	--	18	14	5	*	
Wadena	11	4	--	--	7	--	--	--	
Total	437	289	18	*	74	27	14	11	4
RAINY RIVER:									
Koochiching	212	145	12	--	12	34	1	8	
Lake of the Woods	36	3	*	--	6	26	1	--	
Total	253	148	12	--	18	60	2	8	5
HARDWOOD:									
Mille Lacs	3	2	--	--	--	*	--	1	
Morrison	3	3	--	--	*	--	--	--	
Ottertail	*	*	--	--	--	--	--	--	
Todd	*	*	--	--	--	--	--	--	
Total	36	5	--	--	*	*	--	1	30
PRAIRIE:									
Mahnomen	13	11	--	--	--	1	--	1	
Pennington	1	1	--	--	--	--	--	--	
Polk	1	--	--	--	--	--	1	--	
Roseau	14	2	--	--	12	*	*	--	
Total	29	14	--	--	12	1	1	1	--
State total	1,192	660	40	3	237	154	21	32	45

1/ Includes only those counties that supplied pulpwood in 1969.
2/ County figures are not available.
* Less than 500 cords.

Recent Reports on Pulpwood Production
Published by the
North Central Forest Experiment Station

Pulpwood production in Lake States Counties, by Arthur G. Horn:

1960 data: Station Paper 94, 28 p.
1961 data: Station Paper 106, 18 p.
1962 data: Research Paper LS-5, 16 p.
1963 data: Resource Bulletin LS-1, 17 p.
1964 data: Resource Bulletin LS-2, 19 p.

Pulpwood Production in the North Central Region by County, by James E. Blyth:

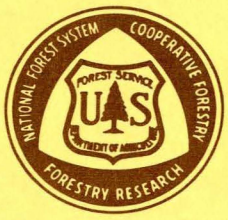
1965 data: Resource Bulletin NC-2, 24 p.
1966 data: Resource Bulletin NC-3, 27 p.
1967 data: Resource Bulletin NC-6, 23 p.
1968 data: Resource Bulletin NC-8, 22 p.

Brief Notes for the past 10 years are:

1960: Tech. Note 606
1961: Tech. Note 624
1962: Research Note LS-23
1963: Research Note LS-48
1964: Research Note LS-65
1965: Research Note NC-3
1966: Research Note NC-31
1967: Research Note NC-59
1968: Research Note NC-86
1969: Research Note NC-100

ABOUT THE FOREST SERVICE . . .

As our Nation grows, people expect and need more from their forests — more wood; more water, fish, and wildlife; more recreation and natural beauty; more special forest products and forage. The Forest Service of the U.S. Department of Agriculture helps to fulfill these expectations and needs through three major activities:



- Conducting forest and range research at over 75 locations ranging from Puerto Rico to Alaska to Hawaii.
- Participating with all State forestry agencies in cooperative programs to protect, improve, and wisely use our Country's 395 million acres of State, local, and private forest lands.
- Managing and protecting the 187-million acre National Forest System.

The Forest Service does this by encouraging use of the new knowledge that research scientists develop; by setting an example in managing, under sustained yield, the National Forests and Grasslands for multiple use purposes; and by cooperating with all States and with private citizens in their efforts to achieve better management, protection, and use of forest resources.

Traditionally, Forest Service people have been active members of the communities and towns in which they live and work. They strive to secure for all, continuous benefits from the Country's forest resources.

For more than 60 years, the Forest Service has been serving the Nation as a leading natural resource conservation agency.